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Abstract

Social cohesion is a concept difficult to define and to measure. As there can be many definitions, so there can be many measurements. The main problem, either in defining or measuring the concept, is its multi-level and multi-dimensional nature.

At one extreme, *country* is the most commonly used level to view social cohesion but measurement at this level is of little use for interventions. At the other extreme, *community* is the most useful level but it is a social construct for which data are difficult to obtain, given the administrative boundaries used in social surveys. As an initial attempt to measure social cohesion at a sub-country level, this study focuses on *census metropolitan areas* for which data on several dimensions of social cohesion are available.

We use the information gathered by the National Survey on Giving, Volunteering and Participating (NSGVP) on three domains of social cohesion: political, economic, and social. Statistical techniques including factor analysis and standardization are applied to the data to generate an overall index of social cohesion for each CMA.

"*...social solidarity is completely a moral phenomenon which, taken by itself, does not lend itself to exact observation and indeed to measurement. To proceed to this classification and this comparison, we must substitute for this internal fact which escapes us an external index which symbolizes it and study the former in the light of the latter.* "
(Durkheim, 1893[1965], p.64)

1. Introduction

More than a century ago, Durkheim (1893) stated that there was neither a clear definition of the concept of social cohesion nor was there a possibility of its direct measurement. A century of advance in empirical observation and analytical techniques have not overcome the problem. There is still no universally recognized definition of social cohesion and those that have been offered are at times contradictory and difficult to operationalize. For example, a definition by Rossell (1995), also adopted by Maxwell (1996), states that social cohesion involves "building shared values and communities of interpretation, reducing disparities in wealth and income, and generally enabling people to have a sense that they are engaged in a common enterprise, facing shared challenges and that they are members of the same community". Criticising the ambivalence of the expression "shared values" (and noting that social cohesion does not mean "social sameness, homogeneity of values or opinions ..."), Stanley (2003:9) offers his own definition of social cohesion as "the sum over a population of individuals' willingness to cooperate with each other without coercion in the complex set of social relations needed by individuals to complete their life courses". While this definition avoids the assumption of commonality of values, it too is wanting in that social cohesion is a group property greater than the "sum" of individual parts. As Mudrack (1989:38) pointed out, such a "legacy of confusion" arises because "Cohesiveness is a property of the group and yet the group as a distinct entity is beyond the grasp of our understanding and measurement. Consequently, researchers have *perforce* directed their investigations at individuals...."..

Without being able to exactly define social cohesion, it is often understood as "something that glues us together". It is also clear that social cohesion is a multidimensional and multilevel concept. Any attempt at measurement needs to take both of these aspects into consideration. This paper attempts to measure social cohesion in its multidimensional aspect at the level of census metropolitan area. We first discuss the multiple dimensions and levels of measurement and rely heavily on various contributions of past research[1], although lack of space limits the presentation to a few basic sources. Next, we discuss the data and methodology, and then present the results of our analysis. Finally, we discuss what we have learned through this study and suggest improvements in measuring the concept.

2. The Multidimensional and Multilevel Aspects of Social Cohesion

The concept of social cohesion has two basic components (Moody and White, 2000). One refers to the psychological identification of members within a collectivity (*ideational* component). The other refers to the observed relationships among members (*relational* component). Durkheim identified the theoretical connection between these two components by linking changes from "mechanical" to "organic" societies. Contemporary research unfortunately separates these two components, depending on the focus of study, leading to a wide variety of definitions and measurements. To cite a few examples, we see cohesion examined in terms of individual psychological feelings (Bollen and Hoyle, 1990), global structural relationships (Freeman, 1992), and relationships in various possible intermediate groups (McPherson and Smith-Lovin, 1986). All these perspectives touch on different levels at which cohesion can be measured.

Apart from Durkheim's two basic components, other dimensions have been suggested to clarify the concept (see for example, Berger-Schmidt, 2000) but the dimensions that seem most amenable to operationalization and measurement are the five discussed by Jenson (1998), subsequently expanded to six by Bernard (1999) and classified as follows:

Dimensions of Social Cohesion		
Domain/ Type	**Formal**	**Substantial**
Economic	Inclusion/ Exclusion	Equality/Inequality
Political	Legitimacy/ Illegitimacy	Participation/Passivity
Sociocultural	Recognition/Rejection	Belonging/Isolation

The *inclusion/exclusion* dimension is related to the market forces and addresses the questions of who have opportunities to participate or who are marginalized from participation in the economy. *Legitimacy/illegitimacy* refers to how adequately the institutions (such as the government, political parties, and unions) represent the people. *Recognition/rejection* acknowledges the virtue of pluralism. *Participation/passivity* relates to people's involvement in governance or in politics. *Belonging/isolation* relates to shared values or sense of being part of a community (Jenson, 1998). The sixth dimension, *equality/inequality* was suggested by Bernard (1999) arguing that equality is another essential dimension of social cohesion that cannot be simply expressed in attenuated forms such as "equality of opportunity" but rather calls for reducing inequality of conditions.

In this study, the term *domain* is used to indicate the major dimensions of social cohesion described above, namely Social, Political and Economic. And, the term *dimension* is used to indicate the sub-dimensions within each domain, namely Recognition, Belonging, Legitimacy, Participation, Inclusion and Equality.

Measures of cohesion for the nation as a whole may be interesting and useful especially for cross-national comparisons. Putnam's (1995) "social capital", for example, is measured for the whole country [but see Portes' (1998) criticism of the measures used for social capital]. Similarly, the indicators suggested by Thomas (1999) are computed for the country as a whole, using different time points. However, it would seem appropriate to measure cohesion at "community" level, as

communities are where people live, share, and engage in day-to-day activities. But "community" or "neighbourhood" is another social construct that is difficult to pin down using geographic maps. Thus, people in the same geographic area may have different "communities" or "neighbourhoods" that are meaningful to them; or neighbourhoods and communities can span over, and slice across, two or three geographic areas. The literature on communities also debates whether space and geographic proximity are essential.

To "capture" communities, we need to consider the smallest possible geographic areas. Using the census enumeration areas (EA) is one possibility, although it has no other intrinsic meaning than the convenience of available enumerators. There are about 44,000 enumeration areas in Canada. Our initial work at this level soon ran into the problem of small or no numbers in many EAs, not only with the survey data but also with the census data. Even though the possibility of imputing the "missing" values exists, it would be unwise to do this for such a large number of areas. One could decide to move up to the next higher geographic level, namely census tracts (CTs). There are about 4400 CTs in Canada, and that looks feasible to handle even with imputation methods. However, the problem with the survey data still exists. [See Myles et al. (2000) for an example of using CTs as "neighbourhoods".] The Census Metropolitan Areas (CMA) is a feasible option, at least to start with, and this paper shows measurement of social cohesion for this level using the indicators available from a survey.

3. Data and Methodology

In computing the indicators of social cohesion, we set the following criteria with respect to the data: (a) They should be up-to-date; (b) the measures to be calculated from the data should be statistically robust; and (c) the indicators should directly or indirectly measure a major aspect of cohesion. While we have sought data from various sources, the data collected through the National Survey of Giving, Volunteering, and Participating (NSGVP) seem to be a good starting point to measure social cohesion.

The NSGVP is certainly up-to-date as it was conducted in 2000 and collected information from 14,724 respondents residing in Canada excepting those from the Territories and residents of institutions. This study focuses on the CMAs since the non-CMAs are scattered all over, even within a province. The survey covered 64 CMAs with a total of 8374 respondents; however, to meet the criterion that the data should allow the computation of statistically robust estimates, we limited our analysis to CMAs with 30 or more respondents, reducing our sample to 8093 respondents from 49 CMAs that constitute our units of analysis (see Table 1 for details).

As for the third criterion, the NSGVP was conducted mainly to gather information on giving, volunteering, and civic participation, which are all indicators of a specific dimension of social cohesion, namely the dimension of *participation*. And, there were also questions related to the other dimensions such as on voting behaviour (*legitimacy*), labour force participation and income (*inclusion* and *equality*), and socialization and ethnicity (*belonging* and *recognition*). These yielded

the following variables measured either as proportions or heterogeneity measure[2] estimated from weighted data:

Variables	*Description*	*Domain-Dimension*
Voted - Fed	Proportion of people voting in the last federal election	Political-Legitimacy
Voted - Pro	Proportion of people voting in the last provincial election	
Voted - Mun	Proportion of people voting in the last municipal election	
Volunteer	Proportion volunteering	Political- Participation
Civic Part	Proportion participating in organizations	
Full-time	Proportion in full-time job	Economic - Inclusion
Tenured	Proportion with job tenure	
Pinc>20T	Proportion with personal income greater than $20000	Economic - Equality
Wkly - Fam	Proportion socializing weekly with family and relatives	Social - Belonging
Wkly - Fri	Proportion socializing weekly with friends	
Wkly - Spt	Proportion joining weekly in sports and recreation with friends	
Ethnic Het	Heterogeneity measure of major ethnic groups	Social - Recognition

Many other measures (such as proportions employed, union members, donors, length of stay in community, and heterogeneity measures of age and gender) were also examined but initial exploratory factor analyses helped us to narrow the list to the above measures that had high loadings on the factors.

As for methodology, we followed a schema presented in Figure 1, which extended the methods used for computing *Indices of Deprivation 2000* in England (Department of the Environment, Transport and the Regions, 2001). Factor analysis, both exploratory and confirmatory (Structural Equation Modelling), was used with the selected variables for the six dimensions. The exploratory factor analysis selected the more useful indicators of the six dimensions and eliminated the redundant ones. The structural equation model confirmed the relationships and the error (co)variances between the selected indicators and the domains - the latent variables of interest. These relationships and error (co)variances were then used to estimate the latent scores for each domain which were in turn used to create a *domain index*.

To combine domain indices into an overall CMA-level index of social cohesion, the following procedure was adopted (see footnote 3 for more details).

> (1) Latent scores from the Structural Equation Model are derived from the relationships (variances and covariances) between various indicators under each domain. Unlike the factor scores produced by factor analysis, these latent scores are not orthogonal as the model indicates some relationship between the domains. These latent scores are already in a

standardized form but have different measures of skewness and kurtosis for each domain.

(2) In order to bring them all to a uniform metric, a simple ranking of these scores is done, thus yielding ranks for each CMA within each domain. These ranks have a uniform distribution and range from 1 to 49. In order to combine latent scores into an overall index, ranks are derived from latent scores, which in turn are based on indicators used. It is obvious that some indicators (and hence some domains and dimensions) will have disproportionate effect on the overall score. High score in one domain can be fully cancelled out by low score in another. To reduce this cancelling effect on the overall index, the domain ranks are transformed into a proper distribution that is the same for all domains. We have used the exponential distribution for this purpose.[3]

All the above procedures assure that the overall index of social cohesion for each CMA would be a weighted, exponentially distributed, ranked score, and independent of population size. A specific usefulness of these measures of cohesion is that they can be used either as dependent or independent variables in other studies.

4. Results and Interpretations of Analysis

a) Exploratory Factor Analysis

As seen in Table 2, four factors were drawn from the selected indicators. These factors explain 73% of the relationships between these indicators. The four factors classify the indicators into the theoretical domains (Social, Political, Economic) but the classification does not readily follow the six dimensions mentioned above. Factor 1, for example, includes civic participation, volunteering and socializing variables, which combines the political dimension of *participation* and the social dimension of *belonging*. This indicates that while we distinguish formal involvement in organizations from informal socializing with family and friends, there could be an underlying (unobserved) phenomenon common to both dimensions that is captured by this factor. We can call this factor Social Domain.

Factor 2 mainly consists of voting variables, which represent the political dimension of *legitimacy* on the assumption that the democratic exercise of the right to vote leads to institutions representative of the people. We take this factor to represent the Political Domain in the subsequent steps of the analysis.

We initially placed the variables Full-time and Tenured as indicators of the economic dimension of *inclusion*, Personal income as an indicator of *equality*, and Ethnic heterogeneity as an indicator of the social dimension of *recognition* (see section on Data above). But as shown in Table 2, Factor 3 has high loadings from Full-time, Personal income and Ethnic heterogeneity while Tenured falls under Factor 4. Both factors clearly capture an economic domain although which factor represents the dimension of *equality* and which one represents i*nclusion* is difficult to tell. Ethnic

heterogeneity's fitting in with other economic indicators (which is confirmed in Figure 2 below) is totally unexpected. This is probably an indication that while we think of *recognitio*n (or the related concept of tolerance for pluralism) as a social domain, its outcome is mainly seen in the economic domain.

b) Structural equation Model

Confirmatory factor analysis (using structural equation modelling) assured the usefulness of the indicators selected through the exploratory procedure. The results from the LISREL path diagram are summarized in Figure 2. The LISREL model on which the diagram is based has a very good fit, judging from the goodness of fit parameters[4] for the model.

Figure 2 shows that Political domain is very well captured by the three indicators of voting behaviour, with the voting in provincial elections standing out very clearly with an R^2 value of 0.95. The Social domain is captured moderately well by the socializing variables (with R^2 values around 65-70%) but there is much to be desired with the other indicators like civic participation and volunteering which have large error variances. The indicators of the Economic domain are also somewhat weak (with R^2 values hovering around 25-30%). In general, however, the LISREL model clearly shows that all these indicators are good, and most of them have significant effects on respective domains, but they are not sufficient in the sense that most of their error variances are also significant, thus calling for more powerful indicators than what we have here.

Other findings through the exploratory factor analysis are confirmed by the LISREL model (Figure 2). Thus, Ethnic heterogeneity is shown to be related to both Social and Economic domains with an R^2 value of 71%, although the path coefficient connecting it and the Social domain is not significant at 5% level. The model also reveals what cannot be seen in traditional factor analyses; that is, that there are significant error covariances between different indicators, for example, between Civic Participation and Volunteering, and between Full-time work and Tenured Job, which are not unexpected. The model also points to covariances between indicators through the modification indices, namely a significant covariance between Full-time work and Voting in Federal elections, though why this is so is not clear and needs further checking. There is also a covariance between Ethnic heterogeneity and Full-time work that is not however significant.

c) The Domain Scores and Ranks

LISREL model allows computation of latent scores for the three domains of social cohesion. As indicated in the previous section (and in footnote 3), these scores are turned into ranks, ranks into exponentials of ranks, and finally into overall index of cohesion[5], which are all provided in Appendix Table 2. Combining the three domain scores (indices) into an overall index of cohesion for each CMA was done by averaging the domain scores with weights of 30% for the Social and Political domains and 40% for the Economic domain. It needs to be emphasized here that it is the domains' exponentiated *scores* that matter more and that should be used for further analysis, since they are proper distributions. The ranks of these scores may be helpful for interpretation and

comparison of CMAs, but they are not to be used for further analysis.

The ranks of the CMAs under each domain and the overall ranks are presented in Table 3. The first rank in the Social domain (meaning the most "cohesive" in that domain) is held by Lethbridge, followed by Kelowna and Red Deer, all relatively small CMAs. Of the top 10 CMAs in the Social domain four are from the Atlantic region (Summerside, Charlottetown, Sydney-Sydney Mines, and St John) with none from Quebec. In contrast, the first and second rank in the Political domain are both in Quebec (RynNyrda/ValDOr and Trois Rivieres) with three more in the top 10 (Quebec, Sherbrooke, and Baie-Comeau) but none from Ontario. However, Ontario CMAs dominate the Economic domain with Toronto in the first rank and with five others in the top 10 (Kitchener-Waterloo, Windsor, Ottawa, London, and Hamilton). British Columbia is well represented as well with three CMAs in the top 10 (Vancouver, Matsqui, and Chillliwack-Hope).

Looking at the lowest ranked CMAs within each domain, these include a predominance of cities from Quebec in the social domain, while those lowest on the political domain tend to be from the West plus Toronto. While the top ranked cities on the economic domain tend to be the larger cities that are west of Quebec, those ranked lowest tend to be smaller cities, or from Quebec, but not Montreal. Thus, the domain ranks are conspicuously clustered in the provinces, which brings to the fore the significant differences that exist in the provinces, economically, socially and politically.

As for the overall rank, in general, those that rank high in all three dimensions (a rare phenomenon in our data set) should have higher overall ranking. As shown in the last column of Table 3, however, the CMAs that rank high overall do not necessarily rank high in all three domains and the largest cities tend to be in neither the top nor bottom ranked cities. For example, Hamilton, the highest ranked CMA, is 16th in the Social, 29th in the Political, and 9th in the Economic domain. Most in the top 10 have moderately high ranks in at least 2 domains. The top 10 cohesive CMAs are spread out in a number of provinces with 3 from Ontario (Hamilton, St. Catherine, Sudbury), 3 from the Atlantic region (Charlottetown, Fredericton, and St John) and 4 from the West (Red Deer, Moose Jaw, Edmonton, and Victoria), which indicate that no one province has a monopoly of cohesive CMAs. This can be taken to mean that to be at the high end in overall ranking of cohesion, CMAs must have better than average ranking in at least 2 dimensions[6]. Another way of interpreting the results is that CMAs differ in their basis for cohesion and that when weak in a certain domain, they compensate by being strong in another. Thus, in CMAs that rank high in the social dimension, people need to band together to make up for their economic disadvantage; whereas in economically strong CMAs, people may not have as strong a need for strong political involvement. This is seen in the significant negative error co-variances between the economic and political domains and the political and and social domains (see Figure 2). The "compensating effect" results in CMAs that are not greatly polarized, which would have been the case had some CMAs ranked very high in all three domains and others very low in all three domains.

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These ranks are based on relevant data available from the NSGVP derived from models that we have used. Needless to say that the ranks will be different with different sets of data generating different statistical models of cohesion.

5. Discussion and Conclusions

Making use of data from a major Canadian social survey and the paradigm developed by Canadian researchers, this study demonstrates the validity of some of the important aspects of the paradigm as well as the utility of the procedures and models. Both the exploratory and confirmatory factor analyses highlighted social cohesion's multi-dimensionality that encompass the economic, social, and political domains. However, clear distinctions between dimensions proved to be difficult to validate. In the political domain, for example, volunteering and association membership indicative of political *participation* did not statistically fit in with voting behaviour. Rather, they fitted in better with the socializing variables taken to represent the socio-cultural dimension of *belonging*. Similarly, while ethnic heterogeneity is generally assumed to be related to the social domain, it is positively and more strongly related to the economic domain. This brings to the fore the connections between immigration and labour force, and possibly gives support to the contention that homogeneity (of values or opinions) is not an important element of social cohesion.

The results point to the need for more refined conceptualization of the complex relationships among the various dimensions of social cohesion. The confirmatory factor analysis provides a good start as it presents, for example, inter-relationships between domains and dimensions (see curved arrows in Figure 2). The analysis also shows the need for better indicators of the dimensions. Particularly missing in our analysis are *ideational* indicators (as opposed to *relational*). In Stanley's (2003) definition (quoted above), the "*willingness* to cooperate", for example, calls for an ideational indicator. Certainly, indicators of economic dimensions require "hard" data such as what we have used (income, employment), but economic *inclusion* connotes certain attitudes as well (for example, attitude towards immigrants as co-workers). And, the socio-cultural dimensions of *recognition* (or related concept of tolerance) is more attitudinal than behavioural. Thus, it is possible that a strong sense of belonging, measured here by frequencies of socializing with family and friends, may be accompanied by low tolerance for diversity that can be measured only by attitudinal variables.

Even if NSGVP collects ideational variables in future surveys, we would still need to link data from different sources in order to provide a holistic picture of social cohesion. To link data from surveys that collect information from individuals to data on the aggregates (usually obtained through censuses) calls for a gargantuan task of data linkage on the part of data providers (Statistics Canada in our case) and of sieving and selecting reliable indicators on the part of researchers.

This assumes that we would have found the level that best fits our concept of 'communities', which in this study was taken to be CMAs. This is not ideal but justifiable. After all, CMAs are entities, each characterized with distinct economic, political, and social features. But concentrating on CMAs leaves out a big part of the rest of the country - the non-CMAs and, in this study, very small CMAs. Also, CMAs vary greatly in size, and size is correlated with dimensions of social cohesion. It is imperative that we define a level of aggregation that is not too disparate in size and more inclusive and yet would not pose excessive problem in data collection. The usefulness of a study such as this lies not so much on the *ranking* but on the *scores* generated by the model, which can be used to examine the impact of social cohesion on other outcomes such as population health or the

well-being of children and youth. It would also be possible to measure the effect of things like market penetration, aging and family change on social cohesion.

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End Notes:

1. One of the most recent noteworthy contributions towards understanding the concept of interest is *The Problem of Solidarity: Theories and Models* edited by Doreian and Fararo (1998). The central idea of this book is that we need a synergy between theorizing and advanced mathematical modelling in understanding what cohesion means and how it is related to other social realities.

2. The heterogeneity measure is computed in this study only for those variables that have three or more categories (e.g. job types, ethnic groups, etc.); simple proportions are used for dichotomous variables. In general, the heterogeneity measures, called also *qualitative variation*, can be computed as follows: $QV = \frac{\sum_{i \neq j} f_i f_j}{\left[\frac{n(n-1)}{2}\right]\left(\frac{F}{n}\right)^2}$, where $f(i)$ = (weighted) frequency of the i-th category, n = number of categories, and F = total (weighted) frequency. The measure takes values from 0 to 1, indicating the degree of heterogeneity. QV is highest when the proportions for all categories are equal – for example, in the case of a trichotomous variable, when the three categories have almost equal frequencies.

3. Latent scores are standardized scores, and therefore will have a mean of zero and standard deviation of 1. Some scores will be positive and others negative. These scores are therefore first converted to ranks as one can more readily interpret (and understand) positive values than negative values. Although latent scores for each domain are standardized distributions, they may have different skewness and kurtosis measures. Thus, for example, in this study, the scores for the three domains Social, Political and Economic have their skewness measures as -0.893, -1.058 and -0.329 and their kurtosis measures as 0.482, 2.956, and -0.137 respectively. In addition, these domain scores range from -2.58 to 1.91, from -3.82 to 1.69, and from -2.44 to 1.92 respectively. (See Appendix Table 2), negative scores denoting the least cohesive and positive scores the most cohesive. It is necessary, therefore, to convert them all into one and the same metric, having the same statistical measures such as mean, standard deviation, skewness and kurtosis (in other words, they all have a common distribution).Working with a common distribution for all the three domains safeguards against many pitfalls, such as for example, while combining domain scores, high score in one domain can be fully cancelled out by low score in another domain because of the differences in their distributions.

One can transform either the latent scores themselves or their ranks into a common distribution. We have used the latter procedure and an exponential transformation as follows:

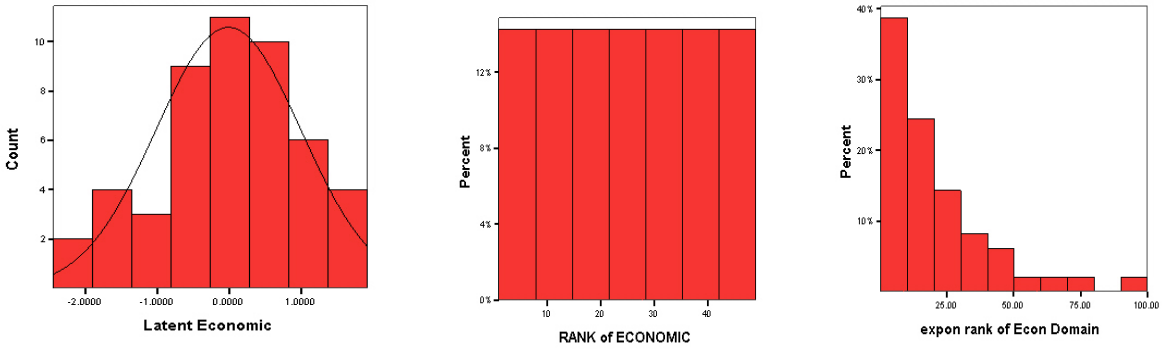
a) Domain ranks (R) range from 1 to 49, 1 denoting the most cohesive and 49 least cohesive under that domain. [Note that "least cohesive" does not mean absence of cohesion.] These ranks were scaled to the range of (0,1) by computing NR = R/49.
b) To transform these values into a common (exponential) distribution, the following formula was used. For example for the Economic Domain:

    Ecotr = -20 * ln[(1 - NR) * (1 - exp(-100/20)]

    The value 20 stands for the mean of the exponential distribution. Trial and error will indicate the best value that gives a very good exponential shape. These transformed values - call them

exponentials of ranks - will range from 0 (strictly 0.41 = 1/49) to 100, zero denoting most cohesive and 100 least cohesive. The transformation results in a proper distribution that is common to all domains, having a mean of 20.43, a standard deviation of 20.38, a skewness of 1.853 and a kurtosis of 0.34. The skewness and kurtosis measures are such that they *reduce* any "cancellation effect" that will occur when high scores in one domain are combined with low scores in another.

In order to provide a pictorial view of all these procedures, the following diagrams are



included here to illustrate what happens with the various distributions that we are dealing with. They may provide some insights to the reader.

c) Finally, the exponentials of ranks for each domain were combined to give an overall score of social cohesion. There is a practical problem at this stage in the sense what weights to use to combine the domain scores. If one were to use weights of 40% for the Economic, and 30% each for the Social and Political Domains, the resultant scores are as given in Table 3 and Appendix Table 2. Giving different weights would produce different results, and it is not clear at the moment what weights to use. One possibility is to use the weights as suggested by the standardized estimates of the LISREL model, which yield weights of 46% for the Social, 19% for the Economic and 35% for the Political Domains, which reflect the importance and relevance of the indicators used in the structural equation model. More research with more powerful indicators is needed to decide on this point, and for the moment, we leave the overall scores as they are (obtained with the weights of 40+30+30 as mentioned above). **It is relevant therefore to emphasize here that more importance should be given to the domain scores that differentiate the CMAs very well in their various dimensions than to the overall score.**

4. This is confirmed by these statistics for the model: Model P^2 = 52.55 with p = 0.24, Root Mean Square Error of Approximation (RMSEA) = 0.054, Comparative Fit Index (CFI) = 0.93

5. As was described in Footnote 3, these transformed ranks have the same distribution across all the three domains with a mean of 20.43, a standard deviation of 20.38, a skewness of 1.853 and a kurtosis of 0.34. The interpretation of these transformed domain scores is straightforward. For example, let us consider Toronto. It has scores of 26.16, 41.06, and 0.41 for the Social, Political and

Economic dimensions (recall that the smaller the score, the greater the "cohesiveness"). Thus, Toronto falls 6 points above the mean for the Social domain, but one standard deviation above the mean for the Political domain, and 20 points below the mean for the Economic domain (it holding the first rank). It may be easier to interpret a CMA's position on a domain scale by using the percentile distribution (see Appendix Table 3). This percentile distribution holds for all the three domains. Toronto's Social score, for example, falls near the 75th percentile, its Political score around 80th percentile.

6.For example, let us consider Hamilton which gets the first rank in overall score. It holds the 9th and the 16th place in Economic and Social dimensions, which are much above the average rank of 25; its 29th place in the Political dimension is near the average. Thus, a greater weight attached to the Economic domain pushes it to the top place in overall ranking. In contrast, let us consider those CMAs which manifest average scores / ranks in all the 3 domains - for example, Thunder Bay, Victoria, Sept-îles and Winnipeg. These CMAs have their overall ranks in the tens, and looking at the percentile distribution of exponentiated ranks, they fall around the 25th percentile. As a third contrast, consider Halifax. It has greater than average scores in all three domains with an overall score of 18.86 that places it in the 55th percentile. Quebec CMA shows the lowest overall ranking because it has scores for Social and Economic domains falling above the 95th percentile, although it has a score on the Political domain falling below the 10th percentile.

Table 1: Number of Respondents by Census Metropolitan Areas, By Province
2000 National Survey of Giving, Volunteering, and Participating

Newfoundland	
St-John's	153
CornerBrk-DeerLk	46
Total CMA	199
Non-CMA	394
Total Province	593
Prince Edward Island	
Charlottetown	116
Summerside	69
Total CMA	185
Non-CMA	252
Total Province	437
Nova Scotia	
Halifax	257
Sydney-SdnyMines	88
New Glasgow	25
Truro	16
Total CMA	386
Non-CMA	670
Total Province	1056
New Brunswick	
Saint John	151
Bathurst	29
Chatham-Newcast	23
Moncton	138
Fredericton	57
Edmunston	15
Total CMA	413
Non-CMA	482
Total Province	895

Quebec	
Chicoutimi-Jonq	141
Québec	172
Montréal	413
Hull	126
Trois-Rivières	128
Sept-Iles	35
Baie-Comeau	46
Rimouski	11
Sherbrooke	161
RynNrnda/ValDOr	45
Total CMA	1278
Non-CMA	1090
Total Province	2368
Ontario	
Ottawa	267
Sudbury	261
Toronto	687
Hamilton	219
St.Cath-Niagara	220
London	253
Windsor	165
Kitchnr-Waterloo	251
Thunder Bay	221
Oshawa	249
Cornwall	18
Kingston	45
Peterborough	11
Guelph	89
Brantford	56
Sarnia-Clrwater	42
Sault Ste. Marie	25
North Bay	68
Total CMA	3147
Non-CMA	1373
Total Province	4520

Manitoba	
Winnipeg	573
Brandon	48
Total CMA	621
Non-CMA	554
Total Province	1175
Saskatchewan	
Regina	265
Saskatoon	278
Moose Jaw	55
Prince Albert	73
Total CMA	671
Non-CMA	680
Total Province	1351
Alberta	
Calgary	306
Edmonton	287
Lethbridge	35
Medicine Hat	29
Red Deer	35
Grande Prairie	15
Fort McMurray	21
Total CMA	728
Non-CMA	461
Total Province	1189

British Columbia	
Vancouver	371
Victoria	153
Kelowna	50
Kamloops	21
Matsqui	67
Chilliwack-Hope	30
Nanaimo	16
Prince George	32
Dawson Creek	6
Total CMA	746
Non-CMA	394
Total Province	1140
Total respondents in:	
Canada	14724
Non-CMA	6350
CMA	8374
CMAs with < 30 resp.	281
CMAs with 30+ resp.	8093

Figure 1: Methodology used for construction and analysis of indicators of social cohesion

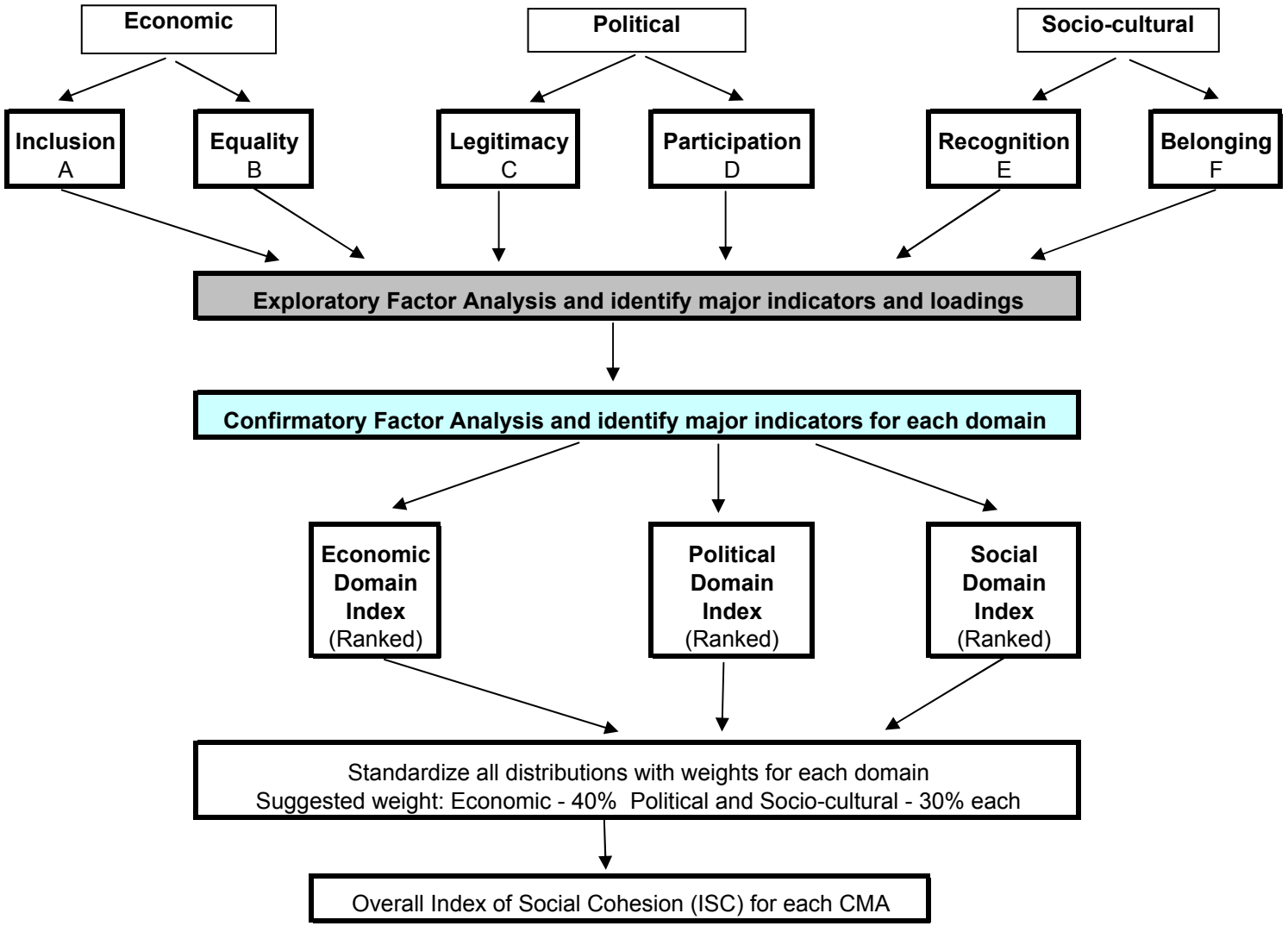


Table 2: Results of Factor Analysis: Final Model

Panel A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.57
Bartlett's Test of Sphericity	Approx. Chi-Square	287.188
	df	66
	Sig.	0

Panel B: Factor Extraction

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.821	31.838	31.838	2.853	23.773	23.773
2	1.983	16.527	48.365	2.665	22.21	45.983
3	1.65	13.752	62.117	1.847	15.394	61.377
4	1.337	11.142	73.259	1.426	11.882	73.259
5	0.944	7.867	81.126			
6	0.562	4.681	85.808			

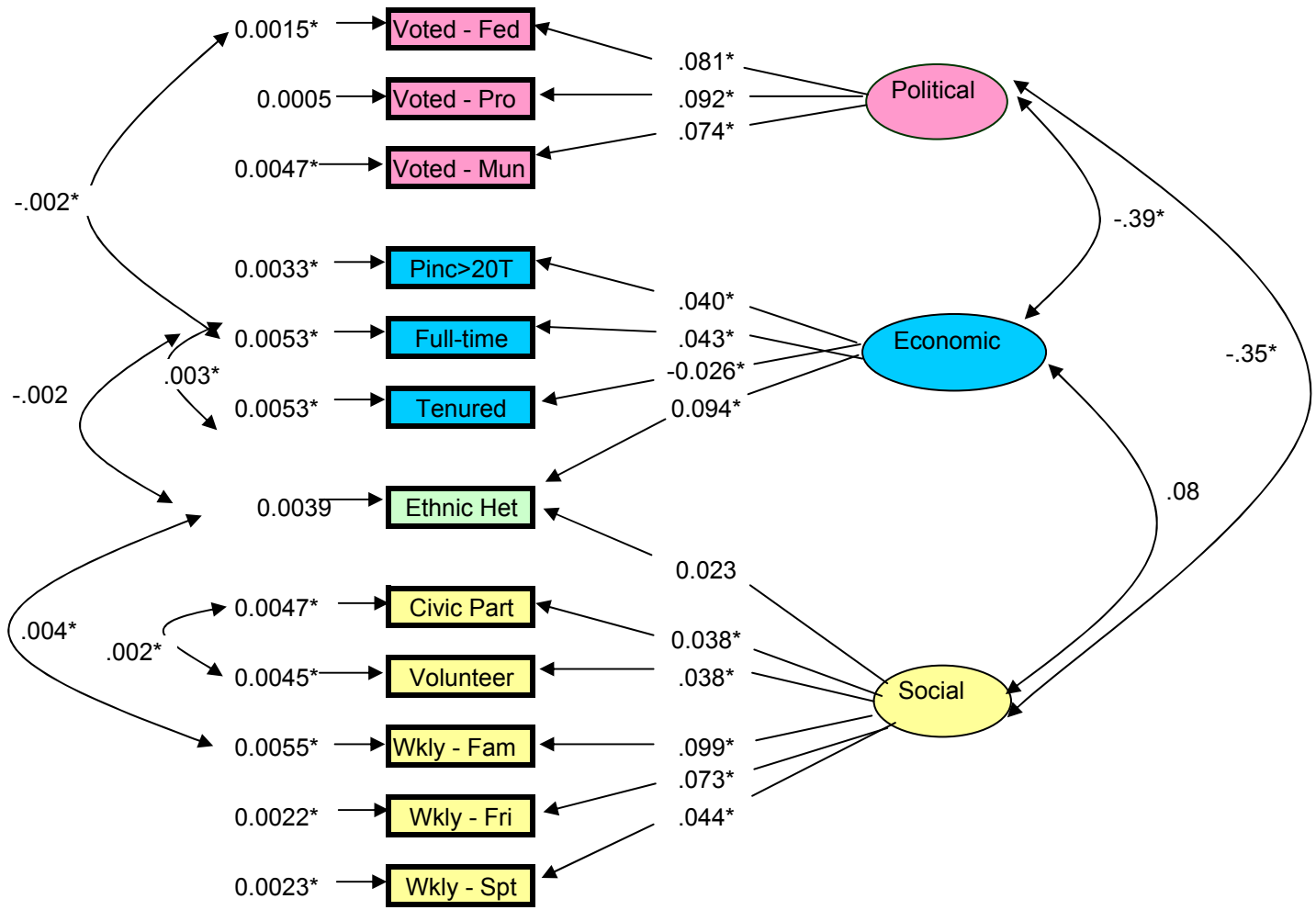
Extraction Method: Principal Component Analysis.

Panel C: Factor Loadings

Rotated Component Matrix

	Component			
	1	2	3	4
voted in last federal election	-0.153	0.910	-0.207	-0.096
voted in last provincial election	-0.199	0.898	-0.159	0.118
voted in last municipal election	-0.035	0.845	0.086	0.156
civic participation	0.706	-0.099	0.098	-0.219
volunteer	0.766	0.138	0.173	-0.257
personal income gt 20000	0.014	0.089	0.838	-0.342
full time	0.003	-0.090	0.686	0.482
tenured job	-0.062	0.202	-0.035	0.763
ethnic heterogeneity	0.198	-0.333	0.714	0.097
weekly socializing with family and relatives	0.733	-0.117	0.147	0.489
weekly socializing with friends	0.747	-0.233	0.07	0.291
weekly sports and recreation with friends	0.751	-0.228	-0.142	0.008

Figure 2: LISREL Model of Indicators of Social Cohesion



LISREL ML Estimates - Measurement Equations

VOTED_FED = 0.081*Politica, Errorvar.= 0.0015 ,R2 = 0.81

VOTED_PR0 = 0.092*Politica, Errorvar.= 0.00048 ,R2 = 0.95

VOTED_MUN = 0.074*Politica, Errorvar.= 0.0047 ,R2 = 0.54

PINC>20 = 0.040*Economic, Errorvar.= 0.0033 ,R2= 0.32

FULLTIME = 0.043*Economic, Errorvar.= 0.0053 ,R2 = 0.26

TENURED = - 0.026*Economic, Errorvar.= 0.0053 ,R2 = 0.11

CIVIC PART = 0.038*Social, Errorvar.= 0.0047 ,R2= 0.24

VOLUNTEER = 0.038*Social, Errorvar.= 0.0045 ,R2 = 0.25

WKLY_FAM = 0.099*Social, Errorvar.= 0.0055 , R2 = 0.64

WKLY_FRI = 0.073*Social, Errorvar.= 0.0022 ,R2 = 0.71

WKLY_SPT = 0.044*Social, Errorvar.= 0.0023 ,R2 = 0.45

ETHNIC HET = 0.023*Social + 0.094*Economic, Errorvar.= 0.0039 ,R2 = 0.71

Table 3: CMA Overall Rank and Rank by Major Domains

Rank by Domains						Overall Rank	
Social		Political		Economic			
1	Lethbridge	1	RynNrnda/ValDOr	1	Toronto	1	Hamilton
2	Kelowna	2	Trois-Rivières	2	Kitchnr-Waterloo	2	St.Cath-Niagara
3	Red Deer	3	Summerside	3	Windsor	3	Red Deer
4	St.Cath-Niagara	4	Québec	4	Vancouver	4	Sudbury
5	Summerside	5	Sydney-SdnyMines	5	Matsqui	5	Charlottetown
6	Guelph	6	Sherbrooke	6	Edmonton	6	Fredericton
7	Prince George	7	Kelowna	7	Ottawa	7	Saint John
8	Charlottetown	8	Prince Albert	8	London	8	Moose Jaw
9	Sydney-SdnyMines	9	St-John's	9	Hamilton	9	Edmonton
10	Saint John	10	Baie-Comeau	10	Chilliwack-Hope	10	Victoria
11	Brandon	11	Montréal	11	Oshawa	11	Winnipeg
12	North Bay	12	Moncton	12	Fredericton	12	Sept-Iles
13	Saskatoon	13	Charlottetown	13	Red Deer	13	Thunder Bay
14	Calgary	14	Brandon	14	St.Cath-Niagara	14	Kelowna
15	Edmonton	15	Saint John	15	Kingston	15	Brantford
16	Hamilton	16	Brantford	16	Montréal	16	London
17	Kingston	17	Victoria	17	Sudbury	17	Kitchnr-Waterloo
18	Moose Jaw	18	Chicoutimi-Jonq	18	Calgary	18	Guelph
19	Sudbury	19	Thunder Bay	19	Hull	19	Kingston
20	Sept-Iles	20	Hull	20	Winnipeg	20	Ottawa
21	Kitchnr-Waterloo	21	Fredericton	21	Sarnia-Clrwater	21	Calgary
22	Victoria	22	Sudbury	22	Moose Jaw	22	Chilliwack-Hope
23	Thunder Bay	23	Winnipeg	23	Brantford	23	Regina
24	Regina	24	North Bay	24	Sept-Iles	24	Summerside
25	Moncton	25	Sept-Iles	25	Guelph	25	Windsor
26	Winnipeg	26	Moose Jaw	26	Victoria	26	Prince Albert
27	Fredericton	27	Chilliwack-Hope	27	Thunder Bay	27	Brandon
28	Vancouver	28	Ottawa	28	Sherbrooke	28	Halifax
29	Halifax	29	Hamilton	29	Charlottetown	29	Montréal
30	Prince Albert	30	Halifax	30	Regina	30	Oshawa
31	Matsqui	31	Regina	31	Halifax	31	St-John's
32	London	32	St.Cath-Niagara	32	Saint John	32	Moncton
33	Brantford	33	London	33	CornerBrk-DeerLk	33	Matsqui
34	CornerBrk-DeerLk	34	Red Deer	34	Lethbridge	34	Toronto
35	Oshawa	35	Sarnia-Clrwater	35	Saskatoon	35	Sherbrooke
36	Toronto	36	Windsor	36	St-John's	36	Sarnia-Clrwater
37	St-John's	37	Guelph	37	Prince Albert	37	Vancouver
38	Ottawa	38	Edmonton	38	Chicoutimi-Jonq	38	Lethbridge
39	Windsor	39	Kingston	39	Kelowna	39	Chicoutimi-Jonq
40	Chicoutimi-Jonq	40	Oshawa	40	Baie-Comeau	40	Hull
41	Chilliwack-Hope	41	Kitchnr-Waterloo	41	Moncton	41	Saskatoon
42	Sarnia-Clrwater	42	Calgary	42	Brandon	42	North Bay
43	RynNrnda/ValDOr	43	Toronto	43	Summerside	43	RynNrnda/ValDOr
44	Sherbrooke	44	Matsqui	44	RynNrnda/ValDOr	44	Sydney-SdnyMines
45	Montréal	45	Lethbridge	45	Québec	45	Baie-Comeau
46	Trois-Rivières	46	Saskatoon	46	Prince George	46	CornerBrk-DeerLk
47	Hull	47	Vancouver	47	North Bay	47	Québec
48	Baie-Comeau	48	CornerBrk-DeerLk	48	Sydney-SdnyMines	48	Prince George
49	Québec	49	Prince George	49	Trois-Rivières	49	Trois-Rivières

Appendix Table 1: Observed Measures of Variables by CMAs

	Voted Federal Election	Voted Provin Election	Voted Municip Election	Civic Partici-pation	Volun-teer	Per. Inc. > $20T	Full-Time	Tenured	Ethnic Heter	Weekly Fam Soc	Weekly Fr Soc	Weekly Sports
Newfoundland												
St-John's	0.845	0.828	0.728	0.459	0.306	0.621	0.831	0.424	0.656	0.587	0.389	0.321
CornerBrk-DeerLk	0.555	0.609	0.497	0.601	0.261	0.539	0.894	0.461	0.677	0.677	0.333	0.428
Prince Edward Island												
Charlottetown	0.816	0.817	0.692	0.548	0.338	0.572	0.780	0.386	0.715	0.692	0.400	0.332
Summerside	0.806	0.898	0.709	0.483	0.271	0.420	0.782	0.373	0.668	0.750	0.401	0.261
Nova Scotia												
Halifax	0.750	0.710	0.602	0.611	0.324	0.626	0.841	0.320	0.673	0.556	0.457	0.327
Sydney-SdnyMines	0.911	0.889	0.835	0.505	0.358	0.511	0.886	0.580	0.710	0.762	0.514	0.388
New Brunswick												
Saint John	0.790	0.793	0.786	0.444	0.354	0.593	0.806	0.365	0.697	0.695	0.459	0.311
Moncton	0.831	0.824	0.597	0.491	0.327	0.528	0.780	0.481	0.677	0.633	0.382	0.298
Fredericton	0.762	0.789	0.579	0.459	0.375	0.702	0.866	0.416	0.817	0.656	0.453	0.268
Québec												
Chicoutimi-Jonq	0.798	0.727	0.698	0.375	0.218	0.459	0.666	0.426	0.540	0.402	0.191	0.252
Québec	0.855	0.846	0.664	0.473	0.212	0.539	0.770	0.339	0.383	0.238	0.234	0.202
Montréal	0.778	0.819	0.592	0.353	0.154	0.560	0.800	0.370	0.709	0.364	0.236	0.195
Hull	0.736	0.763	0.659	0.484	0.232	0.591	0.823	0.356	0.616	0.327	0.199	0.184
Trois-Rivières	0.849	0.890	0.637	0.391	0.209	0.481	0.668	0.432	0.432	0.295	0.324	0.270
Sept-Iles	0.731	0.752	0.473	0.444	0.301	0.411	0.860	0.231	0.823	0.513	0.420	0.313
Baie-Comeau	0.776	0.854	0.703	0.375	0.393	0.592	0.873	0.406	0.634	0.333	0.286	0.321
Sherbrooke	0.843	0.827	0.634	0.353	0.221	0.526	0.753	0.388	0.632	0.351	0.193	0.262
RynNrnda/ValDOr	0.917	0.867	0.552	0.486	0.278	0.512	0.668	0.407	0.451	0.341	0.232	0.230
Manitoba												
Winnipeg	0.712	0.759	0.640	0.548	0.343	0.567	0.798	0.331	0.755	0.585	0.365	0.320
Brandon	0.819	0.784	0.613	0.548	0.337	0.445	0.684	0.359	0.543	0.646	0.260	0.320
Saskatchewan												
Regina	0.729	0.717	0.512	0.655	0.399	0.577	0.832	0.305	0.678	0.572	0.413	0.313
Saskatoon	0.651	0.629	0.456	0.631	0.413	0.525	0.873	0.359	0.721	0.625	0.429	0.429
Moose Jaw	0.747	0.739	0.623	0.655	0.557	0.614	0.837	0.416	0.763	0.640	0.380	0.287
Prince Albert	0.834	0.840	0.722	0.631	0.345	0.499	0.848	0.485	0.701	0.665	0.286	0.310

Appendix Table 1 (Cont'd): Observed Measures of Variables by CMAs

	Voted Federal Election	Voted Provin Election	Voted Municip Election	Civic Partici-pation	Volun-teer	Per. Inc. > $20T	Full-Time	Tenured	Ethnic Heter	Weekly Fam Soc	Weekly Fr Soc	Weekly Sports
Ontario												
Ottawa	0.743	0.700	0.590	0.486	0.313	0.633	0.794	0.355	0.808	0.472	0.360	0.274
Sudbury	0.754	0.756	0.673	0.521	0.275	0.622	0.775	0.402	0.766	0.620	0.384	0.306
Toronto	0.657	0.644	0.603	0.433	0.200	0.624	0.845	0.330	0.875	0.538	0.343	0.253
Hamilton	0.738	0.707	0.541	0.520	0.276	0.599	0.827	0.292	0.739	0.605	0.341	0.325
St.Cath-Niagara	0.696	0.718	0.641	0.433	0.276	0.559	0.804	0.374	0.800	0.721	0.413	0.319
London	0.709	0.699	0.619	0.545	0.329	0.607	0.795	0.370	0.791	0.570	0.312	0.302
Windsor	0.698	0.698	0.619	0.434	0.243	0.604	0.895	0.394	0.838	0.598	0.290	0.202
Kitchnr-Waterloo	0.675	0.665	0.562	0.470	0.271	0.645	0.853	0.293	0.833	0.624	0.356	0.270
Thunder Bay	0.783	0.780	0.722	0.544	0.305	0.576	0.804	0.361	0.738	0.587	0.427	0.290
Oshawa	0.689	0.677	0.640	0.475	0.281	0.642	0.883	0.367	0.796	0.585	0.398	0.348
Kingston	0.701	0.620	0.602	0.433	0.278	0.615	0.655	0.302	0.666	0.499	0.337	0.352
Guelph	0.632	0.728	0.609	0.433	0.300	0.551	0.806	0.362	0.821	0.667	0.478	0.463
Brantford	0.779	0.782	0.720	0.545	0.194	0.507	0.853	0.215	0.734	0.511	0.352	0.387
Sarnia-Clrwater	0.732	0.735	0.735	0.434	0.224	0.606	1.000	0.549	0.770	0.569	0.292	0.337
North Bay	0.722	0.777	0.719	0.544	0.238	0.533	0.794	0.457	0.556	0.724	0.511	0.342
Alberta												
Calgary	0.704	0.649	0.531	0.622	0.460	0.646	0.835	0.285	0.751	0.560	0.471	0.343
Edmonton	0.691	0.665	0.565	0.558	0.345	0.634	0.794	0.266	0.805	0.553	0.418	0.313
Lethbridge	0.707	0.550	0.536	0.622	0.500	0.584	0.622	0.280	0.638	0.601	0.427	0.506
Red Deer	0.657	0.715	0.548	0.491	0.329	0.544	0.719	0.306	0.855	0.622	0.438	0.378
British Columbia												
Vancouver	0.636	0.550	0.408	0.491	0.221	0.572	0.748	0.373	0.837	0.493	0.351	0.281
Victoria	0.821	0.770	0.552	0.602	0.286	0.578	0.734	0.461	0.788	0.544	0.383	0.326
Kelowna	0.827	0.795	0.594	0.484	0.277	0.402	0.564	0.392	0.717	0.645	0.399	0.324
Matsqui	0.629	0.648	0.499	0.601	0.231	0.598	0.754	0.365	0.805	0.550	0.290	0.333
Chilliwack-Hope	0.783	0.738	0.496	0.548	0.326	0.616	0.934	0.566	0.855	0.542	0.296	0.197
Prince George	0.417	0.421	0.261	0.505	0.279	0.380	0.894	0.523	0.638	0.721	0.581	0.334

Appendix Table 2: Latent Scores, Ranks, and Transformed Ranks by CMAs

	Latent Scores			Rank of Latent Scores			Exponentials of Ranks				Rank
	Social	Political	Economic	Soc	Pol	Eco	Social	Political	Economic	Overall	**Overall**
Newfoundland											
St-John's	-.2155	.8952	-.5363	37	9	36	27.73	4.03	26.17	19.99	31
CornerBrk-DeerLk	.0071	-1.8309	-.3183	34	48	33	23.37	72.23	22.11	37.52	46
Prince Edward Island											
Charlottetown	.8711	.7908	-.2128	8	13	29	3.54	6.12	17.73	9.99	5
Summerside	.9917	1.3491	-.9473	5	3	43	2.14	1.25	41.06	17.44	24
Nova Scotia											
Halifax	.1501	-.2757	-.2472	29	30	31	17.73	18.74	19.80	18.86	28
Sydney-SdnyMines	.8444	1.2931	-2.0050	9	5	48	4.03	2.14	72.23	30.74	44
New Brunswick											
Saint John	.8176	.5426	-.2678	10	15	32	4.53	7.25	20.92	11.90	7
Moncton	.2613	.7919	-.8426	25	12	41	14.14	5.57	35.57	20.14	32
Fredericton	.1948	.2023	.7818	27	21	12	15.85	11.09	5.57	10.31	6
Québec											
Chicoutimi-Jonq	-.9908	.4525	-.6838	40	18	38	33.30	9.08	29.42	24.48	39
Québec	-2.5829	1.3049	-1.6602	49	4	45	100.00	1.69	48.65	49.97	47
Montréal	-1.7591	.8128	.5950	45	11	16	48.65	5.05	7.84	19.24	29
Hull	-2.2178	.2880	.3456	47	20	19	61.03	10.40	9.73	25.32	40
Trois-Rivières	-1.8153	1.6058	-2.4365	46	2	49	53.90	.83	100.00	56.42	49
Sept-Iles	.3449	.0200	.1215	20	25	24	10.40	14.14	13.33	12.69	12
Baie-Comeau	-2.2389	.8635	-.7734	48	10	40	72.23	4.53	33.30	36.35	45
Sherbrooke	-1.5969	1.1591	-.1108	44	6	28	44.50	2.59	16.77	20.83	35
RynNrnda/ValDOr	-1.4212	1.6892	-1.5579	43	1	44	41.06	.41	44.50	30.24	43
Manitoba											
Winnipeg	.1992	.0794	.3306	26	23	20	14.97	12.56	10.40	12.42	11
Brandon	.7676	.7657	-.9222	11	14	42	5.05	6.68	38.13	18.77	27
Saskatchewan											
Regina	.2689	-.3015	-.2141	24	31	30	13.33	19.80	18.74	17.43	23
Saskatoon	.6581	-1.3232	-.4771	13	46	35	6.12	53.90	24.72	27.89	41
Moose Jaw	.3701	-.1124	.1627	18	26	22	9.08	14.97	11.81	11.94	8
Prince Albert	.0605	.9140	-.6237	30	8	37	18.74	3.54	27.73	17.77	26

Appendix Table 2 (Cont'd): Latent Scores, Ranks, and Transformed Ranks by CMAs

	Latent Scores			Rank of Latent Scores			Exponentials of Ranks				Rank
	Social	Political	Economic	Soc	Pol	Eco	Social	Political	Economic	Overall	**Overall**
Ontario											
Ottawa	-.3295	-.2081	1.0171	38	28	7	29.42	16.77	3.06	15.08	20
Sudbury	.3476	.1937	.4910	19	22	17	9.73	11.81	8.45	9.84	4
Toronto	-.1877	-.9012	1.9256	36	43	1	26.17	41.06	.41	20.33	34
Hamilton	.3779	-.2473	.8600	16	29	9	7.84	17.73	4.03	9.28	1
St.Cath-Niagara	1.0298	-.3183	.6485	4	32	14	1.69	20.92	6.68	9.45	2
London	.0440	-.3389	1.0090	32	33	8	20.92	22.11	3.54	14.32	16
Windsor	-.4186	-.4908	1.6757	39	36	3	31.27	26.17	1.25	17.73	25
Kitchnr-Waterloo	.3442	-.7546	1.8270	21	41	2	11.09	35.57	.83	14.33	17
Thunder Bay	.2819	.4518	-.0720	23	19	27	12.56	9.73	15.85	13.03	13
Oshawa	-.0412	-.7275	.8056	35	40	11	24.72	33.30	5.05	19.43	30
Kingston	.3763	-.6643	.6188	17	39	15	8.45	31.27	7.25	14.81	19
Guelph	.9137	-.5402	-.0222	6	37	25	2.59	27.73	14.14	14.75	18
Brantford	.0322	.5236	.1255	33	16	23	22.11	7.84	12.56	14.01	15
Sarnia-Clrwater	-1.3412	-.3832	.1773	42	35	21	38.13	24.72	11.09	23.29	36
North Bay	.6737	.0571	-1.8505	12	24	47	5.57	13.33	61.03	30.08	42
Alberta											
Calgary	.5408	-.8538	.3531	14	42	18	6.68	38.13	9.08	17.07	21
Edmonton	.5029	-.6333	1.1100	15	38	6	7.25	29.42	2.59	12.04	9
Lethbridge	1.9088	-1.2242	-.3574	1	45	34	.41	48.65	23.37	24.07	38
Red Deer	1.1581	-.3437	.6923	3	34	13	1.25	23.37	6.12	9.84	3
British Columbia											
Vancouver	.1766	-1.6071	1.3939	28	47	4	16.77	61.03	1.69	24.02	37
Victoria	.2840	.4741	-.0308	22	17	26	11.81	8.45	14.97	12.07	10
Kelowna	1.7540	.9937	-.7461	2	7	39	.83	3.06	31.27	13.67	14
Matsqui	.0483	-.9375	1.2601	31	44	5	19.80	44.50	2.14	20.14	33
Chilliwack-Hope	-1.0411	-.1974	.8487	41	27	10	35.57	15.85	4.53	17.24	22
Prince George	.8922	-3.8246	-1.7429	7	49	46	3.06	100.00	53.90	52.48	48

Appendix Table 2 (Cont'd): Latent Scores, Ranks, and Transformed Ranks by CMAs

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviati	Skewness	Kurtosis
Latent social	-2.583	1.909	0.006	1.009	-0.893	0.482
Latent Political	-3.825	1.689	-0.011	1.007	-1.058	2.956
Latent Economic	-2.437	1.926	-0.010	1.008	-0.329	-0.137
RANK of SOCIAL	1.000	49.000	25.000	14.289	0.000	-1.200
RANK of POLITICA	1.000	49.000	25.000	14.289	0.000	-1.200
RANK of ECONOMIC	1.000	49.000	25.000	14.289	0.000	-1.200
expon ranks social with 20	0.410	100.000	20.430	20.378	1.853	4.199
expon ranks political with 20	0.410	100.000	20.430	20.378	1.853	4.199
expon rankseconom with 20	0.410	100.000	20.430	20.378	1.853	4.199
Overall Index Iweighted)	9.282	56.418	20.430	10.827	1.801	3.323

Appendix Table 3: Percentile distribution of exponentiated ranks for all domains and of the overall score

Percentile	Exp.ranks	Overall
5	1.0413	9.6444
10	2.1373	9.9878
15	3.2996	11.9211
20	4.5306	12.068
25	5.8459	12.8586
30	7.2498	14.0071
35	8.7644	14.5397
40	10.3978	15.0798
45	12.1829	17.3355
50	14.1354	17.732
55	16.309	18.8124
60	18.736	19.4252
65	21.5143	20.1417
70	24.7212	20.8336
75	28.5727	24.0416
80	33.3018	25.3203
85	39.5918	30.1616
90	48.6492	36.3495
95	66.6328	51.2222